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PERSONAL HISTORY

CHARACTERISTICS

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OF ANTARCTIC VOLUNTEERS

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OF ERIC GUNDERSON

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Personal History Characteristics of Antarctic Volunteers¹

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ABSTRACT

Personal and social characteristics of Navy and civilian volunteers for four Antarctic expeditions were studied. Distinctive characteristics of Antarctic volunteers were described. The study indicated that a potentially hazardous and difficult duty assignment initially attracted superior Navy applicants. Furthermore, after the novelty and glamor of the program had presumably diminished, the quality of volunteers remained high and probably improved. Navy and civilian volunteers differed from each other on many characteristics of which education, age, and occupational experience were among the most pronounced.

The United States relies entirely upon volunteering to obtain personnel for its nuclear submarine, space, and other programs which involve exposure to hazardous or unusual environments. Such dependence upon volunteering for manning vital national programs raises important questions concerning distinctive characteristics of volunteers and the motivational processes underlying volunteering behavior. In planning for and management of special assignment programs, careful study should be made of the types of men who will volunteer for them, not only in the initial but also in later phases of the program.

Research at the U. S. Naval School of Aviation Medicine has indicated that volunteers for hazardous duty (exposure to extreme cold

¹ This study was conducted under Bureau of Medicine and Surgery, Department of the Navy, Research Task NR005.12-2004, Subtask 1, December 1962. Kenneth A. Ford and Frank Thompson rendered statistical assistance. Dr. John A. Plag generously made available data from Navy recruits.

or to cosmic radiation) and volunteers for astronaut training were superior in aptitude, performance, and motivation in the flight training program compared with non-volunteers (Bair and Gallagher, 1960; Ambler, Berkshire, and O'Connor, 1961). In the accelerated Polaris Fleet Ballistic Missile submarine program, no decrement was observed in the above average aptitude level (Navy Basic Test Battery) of volunteers admitted to the program over an 18 month period (Bureau of Naval Personnel, 1962).

In the present study an analysis is undertaken of personal and social characteristics of men who volunteered for a special type of hazardous duty--wintering-over at scientific stations in Antarctica.

Since 1957, the United States has maintained several stations on the Antarctic continent year round to implement the Antarctic Research Program supported by the National Science Foundation and the U. S. Navy. Civilian scientists and technicians are directly engaged in research projects while Navy personnel provide necessary logistic support. Groups of Navy and scientific personnel live and work together in close association and interdependence at these stations for approximately a year. Men are selected for Antarctic assignments primarily on the basis of competence in an occupational specialty. Since the station must be a completely self-sustaining community, a wide variety of scientific, technical, and military occupations, such as glaciologist, ionospheric physicist, meteorologist, electronics technician, physician, mechanic, and cook, are represented. All stations are completely isolated from each other and the outside world except for intermittent radio communication for from seven to nine months, and there is no possible way for

members to leave the station nor for help to reach them if needed during this period.

Information concerning the Antarctic research program, including procedures for volunteering, is widely disseminated throughout the scientific community and the Navy. Volunteering procedures are basically similar: civilians send applications with accompanying references from superiors or professors to the National Science Foundation; Navy personnel apply to their Commanding Officers who forward pertinent information with a personal recommendation to the Bureau of Naval Personnel. All persons, military and civilian, who meet the minimum requirements are given psychiatric examinations at Navy screening centers to evaluate psychiatric fitness.

Problem

The problems to be investigated may be stated in terms of the following specific questions:

- (1) How do Navy volunteers for Antarctic duty differ from the general Navy population?
- (2) How do Navy and civilian volunteer groups differ from the general U. S. male population?
- (3) How do the Navy and civilian volunteer groups differ from each other?
- (4) How do volunteers for the earlier, and presumably more glamorous, expeditions differ from those for later, more routine, expeditions?

Only partial answers can be given to Questions 1 and 2 from data of the

present study; more complete data are available to evaluate Questions 3 and 4.

Procedure

Military and civilian volunteers for four Antarctic expeditions, those ending in 1957, 1958, 1960, and 1961, were subjects for the study. Volunteers for the 1957 and 1958 expeditions were combined into one sample as were volunteers for the 1960 and 1961 expeditions in order to provide adequate civilian samples for comparison over the two time periods. A total of 1207 Antarctic volunteers was studied. Twelve per cent of the Navy personnel were officers and 88% were enlisted men.

As part of the routine psychiatric screening program conducted by the Neuropsychiatric Division, Bureau of Medicine and Surgery of the Navy, each applicant filled out the Standard Psychodiagnostic Record Booklet (Personal History).² The Booklet contains 16 pages of questions pertaining to developmental history including birthplace and residence, religion and worship, parental and family background, educational achievements and school adjustment, sports and social interests, medical history and symptoms, and occupational and military experience. Responses to multiple choice and factual items were coded by a trained clerk, checked independently for accuracy, and punched on IBM cards for machine sorting and tabulating. Responses to open-end items were omitted from the present analysis. Percentage distributions for both volunteer groups, military and civilian, and both time periods, 1957-1958 and 1960-1961, were computed over all items and response categories. All percentage differences to be reported in the presentation of results are significant beyond the .05 level of confidence by X^2 test.

²The Standard Psychodiagnostic Record Booklet (Personal History) used in the study was published by the Medicopsychological Research Corporation.

Comparison of Navy Antarctic volunteers with a general Navy population was made possible through personal history data collected on a large sample of Navy recruits by Dr. John Flagg of the Navy Medical Neuropsychiatric Research Unit.

Statistical data on U. S. males were obtained from "Statistical Abstract of the United States, 1959" (U. S. Government Printing Office).

Results

Navy Antarctic Volunteers Compared with All Navy

Navy volunteers from all four expeditions (N=972) were compared on a number of characteristics with 11,009 Navy recruits studied by Flagg.³ Unless otherwise noted items pertain to pre-enlistment history or status.

A larger percentage of Navy volunteers (9%) were born in New England compared with Navy men generally (6%). The middle western United States (Ill., Ind., Mich., Missouri, Ohio, Wisc.) was underrepresented among Navy Antarctic volunteers (17% vs. 21% all Navy). Catholics are underrepresented among Navy volunteers (23% vs. 28% all Navy) while Protestants are overrepresented. Antarctic volunteers report more parents divorced or separated (22%) than all Navy (19%). This result, as it reflected current status, may be due to the age difference between the two groups. Navy men generally were expelled from school much more frequently (28%) than Antarctic volunteers (18%). Only 4% of Navy recruits had had any academic work beyond high school prior to enlistment compared with 11% of Antarctic enlisted volunteers (officers excluded). Finally, a sample of 483 Navy enlisted volunteers for whom GCM (Navy Basic Test Battery) scores were available had a

³ Flagg, J. A. Personal communication. February, 1963.

mean score of 55, a half standard deviation above the overall Navy mean of 50.

The above results support the proposition that Navy volunteers for Antarctic duty were superior in intellectual ability, school adjustment (number of expulsions), and academic attainments (college experience) to Navy personnel generally.

Navy and Civilian Antarctic Volunteers Compared with All U. S. Males

Both Navy and civilian Antarctic volunteers differ from all U. S. males (age 20-34) in marital status. As shown in Table 1 many more Antarctic volunteers, military and civilian, are single than American males generally. Military volunteers, but not civilians, have a higher rate of divorce than U. S. males within the same age range.

Table 1

Marital Status of Antarctic Volunteers and U. S. Males

	Military Volunteers	Civilian Volunteers	U. S. Males, Age 20-34 ^a
Single	53%	57%	28%
Married	40	39	69
Widowed	0	0	0
Divorced	6	2	2
Separated	1	1	1

^a

Figures obtained from Tables No. 39 and No. 41, "Statistical Abstract of the United States, 1959".

A larger proportion of Antarctic volunteers, both military and civilian, were reared in New England (11% vs. 6% for all U. S. males).

The western part of the United States was disproportionately represented among military volunteers while the north central region was underrepresented. The southern area of the United States is grossly underrepresented among civilian volunteers (14% vs. 29%). Protestants are overrepresented among military volunteers while Catholics are underrepresented among civilians. Civilian volunteers more frequently have no religious preference compared with U. S. males generally (11% vs. 4%). Military volunteers are very close to U. S. males (age 18-44)⁴ in the proportion having some college experience (20% vs. 21%) while 89% of the civilian scientists and technicians had some college training and 68% were college graduates.

It is apparent from the above data that Navy Antarctic volunteers have had less success in establishing or maintaining households than U. S. males generally. The regional, religious, and other differences demonstrated with reference to U. S. males generally suggest that Antarctic volunteers are relatively heterogeneous in demographic and personal history characteristics. It seems clear that Antarctic groups cannot be considered typical cross-sections of American male culture.

Differences Between Navy and Civilian Antarctic Volunteers

Military volunteers differed significantly ($p \leq .05$) from civilian volunteers for both time periods on 42 of the 84 characteristics studied.⁵ These consistent differences between the two groups are summarized under the topical headings below.

⁴Two age groups, 18-25 and 26-44, were combined for this estimate; percentage with college experience was 21% for both groups.

⁵Tables of distributions and X^2 for all items are available upon request from the author.

Age. Navy volunteers were younger than civilian volunteers both time periods, although the age difference diminished in the later expeditions.

Table 2

Differences in Age between Navy and Civilian Volunteers
for Two Time Periods

Expeditions		Military	Civilian
1957 and 1958	Mean	25.8	31.4
	% below age 24	46%	17%
1960 and 1961	Mean	27.1	28.8
	% below age 24	36%	22%

Occupational Experience. Military personnel had significantly more experience in their occupational specialties than civilians. This is largely explained by the fact that a number of participating civilian scientists had not completed their graduate training, or had only recently received degrees. The difference in occupational experience was more pronounced for the second time period.

Table 3

Differences in Occupational Experience between Navy and Civilian
Volunteers (Per Cent with More Than Five Years in Current Occupation)

Expeditions	Military	Civilian
1957 and 1958	45%	32%
1960 and 1961	56%	24%

Birthplace and Residence. More civilians were foreign born; the proportion was smaller, however, in the later group studied. Navy volunteers more typically were reared in the southern or rural United States.

Religion. Although the percentage differences were small (1% for military versus 4% for civilian), significantly more civilians expressed a preference for the Hebrew religion both time periods.

Parental and Family Background. Differences in age, birthplace, citizenship, educational, and occupational levels of the parents paralleled those for the subjects in the two groups. Parents of military volunteers married at an earlier age than did those of civilians, divorced or separated more often and reared larger families. Civilian volunteers more frequently reported being influenced in their development by persons outside the immediate family, such as teachers or ministers. Wives of civilian volunteers more often had gone to college and had worked in professional positions before marriage.

Education. The sharpest way to illustrate the considerable difference between military and civilian personnel in amount of education is to note that 89% of the civilians, as compared with 20% of the military (officers included), had had some sort of collegiate experience. This is a reflection of the higher academic requirements for most of the technical and professional specialties required for research in the Antarctic and represented in these groups. The difference persists over the second time period.

School Achievements and Adjustment. Civilian volunteers reported earning academic honors or scholarships, excellent high school academic records, and science as their best subject in high school more frequently than did military volunteers. Military volunteers played hockey and had been expelled from school more frequently.

The general attitude toward schools and educational experience is highly consistent with the total years of schooling attained by the two groups.

Sports and Other Interests. While military volunteers had typically engaged in much hunting and fishing as a youth, civilian volunteers had preferred swimming, tennis, or golf more frequently than had military. Civilian volunteers more often rated themselves superior or very superior on traits of agility, endurance, and courage compared with military volunteers. Civilians engaged in hobbies, read books and magazines, participated in clubs and held club offices more frequently than military.

Comparison of Volunteers from Earlier and Later Expeditions

Significant differences between earlier and later expeditions on personal history characteristics of military personnel were found for 9 of the 82 items studied. Items differentiating earlier from later civilian volunteers were few and appeared to be random.

The increases in age and occupational experience of the military personnel in the later expeditions is of some practical importance since presumably such changes would be paralleled by increases in maturity and competence. Other differences between military volunteer groups over the two time periods seemed of minor importance.

Conclusions

The following conclusions were drawn from the study:

- (1) Navy Antarctic volunteers (enlisted) were superior to Navy enlisted personnel generally in intellectual ability and past school adjustment and achievement.

(2) Both Navy and civilian volunteers differed from the general U. S. male population in marital status, area of childhood residence, and religious identification. Navy volunteers exceeded the divorce rate of U. S. males of comparable age. A much higher proportion of civilian volunteers have had college experience than U. S. males generally.

(3) Navy and civilian volunteers differed significantly on a large number of personal and social characteristics, of which education, age, and occupational experience were among the most pronounced. Navy volunteers were younger but at the same time more experienced in their occupational specialties than civilian volunteers. Civilians had superior school records and had attended college much more frequently.

(4) Military volunteers for later expeditions were somewhat older and more experienced in their jobs than those for earlier expeditions. Other than these important differences, only minor changes appeared in the military volunteer population over time. No significant changes in the civilian volunteer population were inferred.

The study indicates that a potentially hazardous and difficult duty assignment initially attracted superior Navy applicants. Furthermore, after the novelty and glamor of the program had presumably diminished, the quality of volunteers remained high and probably improved. These findings are reassuring in view of the complete reliance upon volunteering in a number of vital national programs such as nuclear submarines and space.

The study suggests that considerable heterogeneity in cultural values, attitudes, and social behaviors may be expected in Antarctic

groups. Also, the wide differences between the Navy and civilian volunteers on a variety of personal and social characteristics suggest that specific motivations for volunteering may be different for the two populations.

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